Clean Environment Commission

Report on Public Hearings

November 10, 1986 to January 20, 1987

HAZARDOUS WASTE MANAGEMENT

Manitoba

THE CLEAN ENVIRONMENT COMMISSION

REPORT ON PUBLIC HEARINGS

PHASE I - STAGE II

MANITOBA HAZARDOUS WASTE MANAGEMENT PROGRAM

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MANITOBA HAZARDOUS WASTE MANAGEMENT PROGRAM PHASE I — STAGE II HEARINGS

VOLUME I

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This report (Volume I) summarizes all of the main issues which were addressed at the Phase I — Stage II hearings on Manitoba's Hazardous Waste Management Program. The concerns and recommendations received by the Commission are listed and all of the Commission's recommendations resulting from the hearings are included.

Volume II contains a summary of proceedings of each of the fourteen hearings held throughout Manitoba and a precis of the approximately forty briefs presented.

HAZARDOUS WASTE — A PUBLIC PROBLEM

Since the early 1970's, both the general public and governments across North America have recognized the need to establish appropriate and safe facilitics for the treatment and disposal of hazardous waste. The "Love Canal" (Niagara Falls, New York) incident in the late 1970's, the epitome of hazardous waste mismanagement, focussed public attention on the crisis that can be created from hazardous waste mismanagement. At Love Canal, hazardous wastes had been inappropriately landfilled and later this landfill site had been developed for residential housing and a school.

Hazardous wastes are still with us today and in ever-increasing quantities; however, because of Love Canal and other crises resulting from improper disposal of untreated hazardous wastes, they have generated fear and elicited an attitude that hazardous waste treatment and disposal facilities must be established but "not in my backyard" (the NIMBY syndrome).

Everybody generates hazardous waste and currently these wastes are being largely disposed of inadequately — in municipal landfills and sewer systems. Without proper treatment and disposal, unnecessary and possibly catastrophic problems may develop. Hence, action is needed now to establish a suitable hazardous waste management system in Manitoba.

The public rightfully distrusts and resists the siting of facilities that improperly treat and dispose of hazardous waste. This fear and resistance is expected to be overcome by a proper hazardous waste management system, one that disposes of only properly treated, stabilized and solidified waste in a scientifically designed, protected and carefully monitored, secure landfill. Public education and involvement are the keys to this process.

The proposals made by the Environment Department and considered at public hearings by the Clean Environment Commission concern the collection of hazardous wastes across the province, the treatment of these wastes to neutralize, detoxify, stabilize and solidify them (or to incinerate them if appropriate and stabilize the ash) and only then to deposit this reasonably benign residue in a secure, scientifically selected and constructed landfill site subject to careful and continuous monitoring. These processes and facilities must all be designed to be safe.

Despite the fact that the safety of a proposed hazardous waste management system would have the highest priority, all risk can not be eliminated. An accident or a process upset are possible and, as in most industry, even normal operation entails some risk. However, when considering the acceptability of a hazardous waste treatment and disposal facility in any proposed site location, it must be kept in mind that many of the relevant hazardous wastes are spent and diluted products of industry and that the products from which these wastes are generated are now produced or utilized in full strength by industry and are transported on our railways and highways in concentrated form.

The facilities and disposal site for the hazardous waste management program represent another high-tech industry for the province — certainly not without risk — but likely with less risk than many existing industries. More importantly, the facilities and disposal site would bring the usual benefits of a new industry (employment, income, etc.) to the host community.

It is the Commission's job following the hearings, based on what was heard and learned during the course of two series of hearings held throughout the province, to make recommendations regarding management system options, site selection criteria, the site selection process and, very importantly, continued public participation in the future development and operation of the management system. During the interval between the first two hearing series, the Commission had the opportunity for discussions with the Chairman of the Ontario Waste Management Corporation, Dr. Donald Chant; the former Chairman of the Minnesota Waste Management

Corporation, Mr. Bob Dunn; and the former Chairman of the Alberta Special Waste Management Corporation, Mr. John Elson, to learn from their knowledge and experience. The Commission is grateful to these gentlemen, to the staff of the Environment Department, and also to all the many individual citizens and organization representatives who attended the hearings, presented formal briefs, gave verbal representations, and made comments or asked questions about all of the material received during the hearing process.

BACKGROUND TO HEARINGS

The Hazardous Waste Management System public hearings, on which this report is based, conducted by the Clean Environment Commission during the period of November, 1986 to January, 1987, are a concluding part of Phase I of the three phase Hazardous and Special Waste Management Plan initiated by the Province of Manitoba in 1982. This program was undertaken in response to increasing environmental awareness and concern that specially designed facilities for the collection, treatment and disposal of hazardous waste are necessary to forestall serious environmental problems.

In Manitoba, we are fortunate in having time to design and implement a management program for hazardous waste. Careful consideration of available options is necessary in order that a safe and efficient system may be provided. Costs cannot be overlooked; however, in the construction of hazardous waste facilities, public safety is the paramount design requirement.

Phase II of this program will include final determination of the components of the hazardous waste management system and the selection of sites for the location of the management facilities. Actual implementation of the system is to take place in Phase III. It is expected that public participation will continue to play an important role in all phases of the plan.

Public acceptance of the management system components and the location of facilities is essential. Experience elsewhere has demonstrated that, without such public approval, the actual siting of facilities is difficult or impossible. Therefore, public participation in the entire process has been and will continue to be a key feature of all steps in the development of the Hazardous Waste Management Program.

The Manitoba program commenced with a public symposium in Winnipeg in March, 1983. The basic dimensions of the problem were described and possible solutions were discussed. This was followed by the first round of Clean Environment Commission hearings during the period December 1983 — February 1984. These hearings were informational in nature and public input was sought concerning the choice of options for ownership and operation of the required facilities whether by a government department, the private sector, or a crown corporation.

The majority of opinion expressed at both the symposium and the hearings was that a crown corporation to own and operate facilities was the best choice of the possible alternatives for a number of reasons. During 1986, the Manitoba Hazardous Waste Management Corporation Act was passed establishing a crown corporation for this purpose.

The Dangerous Goods Handling and Transportation Act had previously been proclaimed in 1984, and this provided a legislative framework for the development of a system to manage hazardous wastes and to establish appropriate regulations.

During 1985, the Hazardous Waste Management Section of the Environment Department published a report entitled **Hazardous Waste Management In Manitoba**. This report listed the hazardous wastes being produced in Manitoba as identified by departmental staff through consultation with industry throughout the province. By this means a very preliminary estimate of hazardous waste quantities was obtained. The report revealed, to the extent known, the sources of hazardous waste by industry and by region in the province. Disposal methods were identified and wastes were divided into the nine United Nations designated hazardous waste classifications — explosives, gases, flammable liquids, etc.

Alternative methods of treatment and disposal of hazardous wastes were discussed in considerable detail in this report so that a variety of treatment and disposal possibilities could be understood. Five management system options plus alternatives for two of the options were presented.

The report was widely distributed throughout the province in preparation for the second round of hearings by the Clean Environment Commission and informational meetings were held by departmental staff in a number of communities to provide opportunities for questions and discussion related to the booklet. At these meetings, a number of persons, including municipal councillors, requested additional information and preparation time prior to the next hearings. Accordingly, the hearings which had been tentatively scheduled to commence in the fall of 1985 were postponed for one year.

During the one-year interval, the department and a consultant (IDS/Monenco) analysed the previously selected options for the collection, treatment, and disposal of Manitoba's hazardous waste. Based on the quantities identified earlier, relative capital and operating costs of the various options over a projected 20 year period were estimated. Scenarios of possible user fees were developed for the various options, including possible involvement of government subsidies. This information was published for the Environment Department in **Hazardous Waste Management Cost Analysis**, April, 1986, by IDS Monenco.

This publication was given wide distribution in preparation for the Commission's hearings which commenced on November 12, 1986 in Arborg.

THE COMMISSION'S MANDATE

On September 19, 1986, the Honourable Gerard Lecuyer, Minister of Environment and Workplace Safety and Health requested that the Clean Environment Commission proceed with the Stage II hazardous waste public hearings.

In his letter to the Commission, the Minister emphasized the importance of public consultation and involvement in all steps of the hazardous waste management program and requested that all necessary steps be taken to maximize this participation. He also advised that the Environmental Management Services Branch was preparing a formal departmental brief which would be presented at the hearings.

Attached to this letter were terms of reference for the hearings directing the Commission to submit a report with recommendations based on the findings of the public hearings. The terms of reference noted the recent decision of the government to establish and operate a Manitoba hazardous waste management system by means of a newly legislated crown corporation.

The following specific terms of reference were provided:

1. Based on the Department's report outlining the specific hazardous and special waste situation in Manitoba, the government's action plan, an appraisal of present treatments and capabilities, current technology available, Hazardous Waste Management Cost Analysis Report and options for implementing a comprehensive waste management system, the Commission shall solicit public opinion and involvement and provide government with recommendations for a preferred system option.

2. In conjunction with the determination of a preferred option, the Commission shall provide the government with recommendations on an effective mechanism for public input and involvement in the process to select whatever sites might be required as part of the management system, and recommendations as to ongoing public involvement relative to the actual operation of the eventual system.

3. The Commission shall solicit public input and provide the government with recommendations on candidate site selection criteria. The criteria should address public concerns with respect to the siting of a facility or components of facilities which might be required in a waste management system, including transportation, socio-economic and other related concerns.

PREPARATION FOR HEARINGS

The initial formal preparation for the Stage II hearings commenced in July 1985 with the publication by the staff of the Hazardous and Special Waste section of the Department of the report **Hazardous Waste Management in Manitoba**.

This report contained information concerning the type and estimated quantity of hazardous waste produced in the province. The waste was classified according to type and region. This information was obtained by the staff of the Department in consultation with as many as 750 Manitoba businesses. Management options for treatment and disposal of these wastes were also discussed in some detail. This report was widely distributed to officials in municipal and government departments, to public and private corporations, to professional, environmental and civic organizations and to interested individuals identified through the symposium and Stage I hearings.

On September 22, 1986, the hearing series was announced at a press conference by the Minister. At the same time 1,600 information pamphlets were mailed to leaders in the municipal, industrial, government and private sectors and this mailing contained a list of the hearing dates and locations, a hazardous waste questionnaire and the terms of reference for the hearing series. Also, a somewhat more limited mailing list was sent the report of a study undertaken by IDS/Monenco consultants, on behalf of the Environment Department. This report contained preliminary cost estimates of hazardous waste disposal and treatment options for Manitoba specified earlier by the Environment Department. Scenarios for a variety of possible user fees, including government subsidy options, were discussed. Copies of these and the other relevant reports were also deposited in all Manitoba libraries.

A two-stage radio and newspaper advertising campaign was carried out between October 6 and December 14. Stage one of the campaign centred on a general awareness of the hazardous waste program and the upcoming hearings, while stage two centred on the dates and locations of the public hearings. Additional site specific advertising was undertaken in early January to accommodate the three additional hearings held in Portage la Prairie, Brandon and Dauphin. This consisted of an ad placed in the local newspaper two weeks prior to the hearing date and radio advertisements in the morning and evening for a five-day duration, one week prior to the hearing date.

Hazardous waste displays were mounted and manned at a number of shopping malls in centers throughout Manitoba where hearings were to be held. Staff of the Environment Department and the Commission also participated in a number of talk shows on Winnipeg and Brandon television and radio stations.

Finally, as individual hearing dates drew near, the Commission Chairperson forwarded letters to all the mayors, reeves, and councils of all municipal governments in the regions where the upcoming hearings were to take place. These letters reminded the recipients of the hearings, drew attention to the opportunity provided for the expression of local views, and welcomed their participation.

CONDUCT OF HEARINGS

The Clean Environment Commission commenced its series of hearings at Arborg on the evening of November 12, 1986. The planned opening at Portage la Prairie two nights earlier had been postponed because of the severe blizzard that had occurred the previous weekend.

All hearings commenced with a welcome and opening remarks from the chair with a short review of some of the features of the hazardous waste management program to date. This was followed by the presentation of the departmental brief by representatives of the Manitoba Department of Environment and Workplace Safety and Health. This presentation, described in Volume II of this report, brought audiences up to date by providing background information on the development of the Hazardous Waste Management program. It was also intended to outline to participants the nature and extent of the problem in Manitoba and the technical and management system approaches available to deal with them. In this way, a vehicle was provided to disseminate information to interested persons, to develop a number of alternative courses of action and to provide a basis for informed discussion of the underlying issues in the context of local interests and concerns. The publication **Hazardous Waste Management in Manitoba**, July, 1985, was made available to those attending the hearings by Environment Department representatives. This report outlined the results of a preliminary hazardous waste inventory, and provided an overview of treatment options.

At almost all of the hearings, representatives of the Manitoba Environmental Council presented a comprehensive brief providing a critical appraisal of the departmental brief and the Council's views of significant factors and approaches to be considered.

At many of the hearings these presentations were followed by an expression of views of those present by means of informal comments and questions to the main brief presenters. At most of the hearings, other substantial briefs and presentations were forthcoming from a variety of groups and organizations representing both private and public sectors.

Hearings were held in eleven regional centres throughout the province. In November, 1986, in addition to Arborg, the Commission held hearings at Beausejour, Dauphin, and Brandon. In December hearings took place in Flin Flon, The Pas, Swan River, Thompson and Morden. Two hearings were held in Winnipeg — on November 19 and December 15, 1986. In January, the rescheduled hearing was held in Portage la Prairie and hearings were repeated in Dauphin and Brandon since elected municipal officials had been absent on the occasion of the first hearing because of a conflict of the hearing dates with the date of the annual meeting of the Union of Manitoba Municipalities.

A total of approximately 450 persons were in attendance at all hearings.

Throughout this entire hearing series, the Commission maintained a relaxed and informal atmosphere. Questions were encouraged from the audience and Commissioners following every presentation. Without exception, the content of the hearings was well received and participants expressed satisfaction with the format and presentation of information. Some dissatisfaction was expressed by a few municipal and industrial representatives who had been hoping to receive more detailed information about the program. To these participants it was explained that final proposals about the nature and location of the facilities would not be formulated until the report of the current hearing series had been submitted. Following this, the newly formed hazardous waste crown corporation was expected to develop these proposals. This would be done in such a way as to ensure there was broad public participation and consultation before final decisions were made.

Questionnaires were distributed at all hearings. The questions were in a multiple choice format and were designed to gather information on public attitudes with regard to the hazardous

waste program rather than to develop specific criteria on site selection or public participation. The questionnaire also provided space for comments regarding site selection critria, preferred options and public involvement.

A coffee break, intended to faciliate informal discussion among the participants and between the participants and the Commission, was taken mid-way through the evening.

Formal, written briefs were presented on behalf of Ms. Carol Duyf, the L.G.D. of Pinawa, Concerned Citizens of Manitoba, Manitoba Department of Agriculture, Swan River Chamber of Commerce, Roger F.C. Smith, City of Brandon, Brandon & District Labor Council, Concerned Citizens of the Municipalities of Wallace and Woodworth and the Town of Virden, Simplot Chemical Co. Ltd., Flin Flon Chamber of Commerce, Hudson Bay Mining & Smelting Co., Town of The Pas, Canadian Manufacturer's Association, Messrs. P. Craddock and K. Lacroix, City of Thompson, Thompson Kennel Club, Manitoba Hydro, Manitoba Health Organization Inc., City of Winnipeg, Industrial Technology Centre, Scott-Guthrie Associates, Faroex Ltd., Atomic Energy of Canada Ltd., Tricil Ltd., Canadian Union of Public Employees, Manitoba Federation of Labor, Canada Department of Fisheries and Oceans, Grades 5 and 6 Students of Kelwood School, Chem Security Ltd., and the Manitoba Department of Health.

Unwritten briefs were also presented by Ms. L. Cantin, The United Steel Workers of America of Flin Flon, The Scrap Metal Processors of Manitoba, and the Professional Dry Cleaners of Manitoba.

A precis of each brief is contained in Volume II of this report.

CONCERNS AND RECOMMENDATIONS RECEIVED AT THE HEARINGS AND THE COMMISSION'S RECOMMENDATIONS

THE HAZARDOUS WASTE MANAGEMENT SYSTEM OPTIONS

Public input into the selection of a system option for the management of Manitoba's hazardous waste was one of the specific and most important terms of reference given to the Commission.

The Environmental Management Division's brief, presented to the hearings, outlined four separate options, with a fifth option being a combination of other options.

The options considered were as follows:

Option 1 upgrade existing facilities.
Option 2 out-of-province disposal of waste.
Option 3 regional specialized facilities.
Option 4 an integrated facility at one location.
Option 5 a combination of options.
Examined were:
(a) an integrated facility with out-of-province incineration;
(b) an integrated facility utilizing shared mobile incineration;
(c) mobile incineration with out-of-province disposal of non-incinerable waste; and
(d) an integrated facility, including a liquid injection incinerator capable of handling 25 percent of provincially generated incinerable hazardous waste, combined with out-of-province disposal of the remaining 75 percent of incinerable hazardous waste.

A cost analysis was also presented for each of these options (except the first which was rejected as impractical) giving the present value of total capital and operating costs projected over a 20 year period.

The Option Recommended by the Environment Department

The option recommended by the Environment Department was option 5(a), an integrated facility with out-of-province incineration. This was also the least costly option.

This option was endorsed by the majority of briefs and verbal presentations which addressed this specific issue.

Concerns and Recommendations Received

a. The facilities should not be constructed larger than necessary.

b. A number of persons, who otherwise favoured the Departmental recommendations, felt strongly that incineration facilities should be included in the Manitoba management system.

c. The design of an integrated facility should at least include provision for the future addition of an incinerator and site selection approval should include this provision.

d. Regional facilities would reduce transportation risks.

e. There should be inter-provincial co-operation on all waste disposal and facilities.

f. Establish regional facilities for hazardous waste requiring low technology treatment and one high technology treatment facility near Winnipeg.

g. Locate hazardous waste landfills in all regions.

COMMISSION RECOMMENDATIONS

1. The facilities must not be constructed to a larger scale than is required for Manitoba's hazardous waste as oversizing could be costly in terms of both capital and operating costs. Increments can be added later as needed. This is particularly important in view of uncertainties of the original hazardous waste inventory (also see OUT-OF-PROVINCE DISPOSAL, THE QUANTITY, and COST OF THE SYSTEM).

2. The large majority of hearing participants endorsed the Environment Department's recommended system option. The Commission does not disagree; however, because of uncertain hazardous waste quantities and, thus, less than reliable estimates of costs of options, the Commission recommends that the Corporation should reevaluate the options, particularly the cost considerations, based on a more accurate inventory of hazardous waste that will be obtained when industry is required to formally register its hazardous waste. This will take place following the filing of regulations under the Dangerous Goods Handling and Transportation Act.

3. The Corporation should thoroughly evaluate the possibility of including an incineration capability in the hazardous waste treatment and disposal facilities, particularly in consideration of known local needs. There are evidently recently designed units of small capacity which might match Manitoba's incinerable hazardous waste output. The suitability of existing kilns (e.g. cement plants) should also be evaluated (also see INCINERATION).

4. If an incinerator is not initially constructed as a part of the hazardous waste treatment and disposal facilities, it should be included in the design and be a part of the site selection criteria and approval processes so that it can be added later, as required, without the necessity of an additional approval process.

OUT-OF-PROVINCE DISPOSAL

The hazardous waste management system option recommended by the Department includes out-of-province disposal of incinerable waste, mainly because the quantity of Manitoba incinerable waste is insufficient for practical, economic, continuous incineration. Although this proposed system was endorsed by a majority of people at the hearings, a number of concerns were expressed (also see INCINERATION).

Concerns and Recommendations Received

a. There is a moral obligation to dispose of all of our own waste.

b. If we dispose of waste out-of-province can we logically or morally refuse to accept others' waste?

c. If we ship out wastes we will lose the ability and possible benefits of recycling this waste.

d. There is no guarantee that borders will remain open for receipt of Manitoba incinerable wastes.

e. Inter-provincial systems of waste treament and disposal should continue to be explored, including a mobile incinerator.

f. The system will not be fully integrated without an incineration capability.

Commission Recommendations

1. The Manitoba Hazardous Waste Management Corporation should continue to explore the possibility of inter-provincial co-operation in hazardous waste facility requirements and operation.

2. If Manitoba's total inventory of wastes proves to be much smaller than the preliminary inventory indicates, initial out-of-province disposal of other hazardous waste products should be given further consideration (also see THE HAZARDOUS WASTE MANAGEMENT SYSTEM OPTIONS and COST OF THE SYSTEM).

INCINERATION

At the hearings, the matter of disposal of Manitoba's incinerable waste was a subject of many briefs, presentations and questions (also see OUT-OF-PROVINCE DISPOSAL).

Concerns and Recommendations Received

a. Local incineration is needed at present to handle wastes from health care facilities throughout the province. Some existing incinerator facilities are not meeting regulations.

b. A small incinerator of 5,500 tonnes annual operating capacity or even smaller may now be available to match Manitoba's total incinerable hazardous waste production.

c. A mobile incinerator should be given closer consideration, particularly if such a facility could be shared with other provinces.

d. The economics of incineration could be improved by adding municipal refuse to augment the supply of hazardous waste incinerables.

e. The practicability of utilizing existing kilns for the disposal of hazardous waste incinerables should be investigated e.g. PCB disposal in cement kilns.

Commission Recommendations

1. In view of recent information on the design and availability of smaller hazardous waste incinerators, the Crown Corporation should reconsider the feasibility of including incineration in the Manitoba hazardous waste facilities (also see THE HAZARDOUS WASTE MANAGEMENT SYSTEM OPTIONS).

2. The Corporation should explore the use of existing incinerators and kilns.

3. The Corporation should continue to explore the feasibility of sharing a mobile incinerator with other provinces.

PUBLIC EDUCATION AND INFORMATION

A great many people at the hearings spoke of a need for more information on the hazardous waste issue. A number of educational media were suggested.

Concerns and Recommendations Received

a. There was widespread support for public education and information on hazardous waste as follows:

- —an explanation of hazardous wastes for the lay person and description of appropriate means of disposal;
- —current practices of hazardous waste disposal;
- —hazardous waste generation and reduction;
- —the nature of a hazardous waste facility — to indicate that the facility is a high-tech plant, not a disposal dump;
- —the means to evaluate the costs and benefits of recycling vs. disposal of hazardous wastes;
- —the quantities of hazardous wastes to be transported within the system and the potential severity of transportation accidents;
- —the training of waste management industry workers on health and safety matters and on the transportation and handling of hazardous wastes.

b. The system viewed as delivering this educational/information program is assumed to include the public school programs and curricula, news releases, a newsletter from the Crown Corporation, Manitoba Waste Exchange Bulletin, safety committees in industry, radio and TV commercials, community TV programs and documentaries. Education of this sort should precede public participation whenever possible.

c. Institutes of higher learning should promote studies of hazardous waste technologies and recycling.

d. Government should undertake an ongoing public information program about hazardous waste management. Industry, business, and the consumer, as well as the general public, require education on hazardous waste;

e. Industrial workers should be informed on handling and exposure to hazardous wastes.

f. A citizen's advisory committee should initially review education and information programs -- the Manitoba Environmental Council might be a vehicle for this.

Commission Recommendations

1. The Commission is convinced that a substantial public information and education program is necessary if the establishment of a hazardous waste program is to succeed and be used effectively.

2. The schools as well as the workplace should be included in the public information and education program on hazardous waste.

3. The recommendations received as noted above (a-f) are endorsed by the Commission.

4. Strategies leading to the generation of smaller quantities of hazardous waste should form a key part of the education program. Society needs to be able to make the association between consumer products and the hazardous waste generated during their production.

PUBLIC INPUT AND INVOLVEMENT

One of the specific terms of reference given to the Commission was the requirement to report on public input and involvement in the site selection process and on public involvement relative to the actual operation of the eventual system. Considerable comment was made to the Commission on this subject.

Public input, involvement and participation in all stages of development of the hazardous waste management program — from planning to facility siting and throughout its operation — are major concerns.

Concerns and Recommendations Received

a. Continued public review and participation including public hearings, small scale conferences and informational meetings are necessary during every step of program development.

b. Public participation is an essential key in selecting site criteria, treatment and disposal technology, and actual site selection.

c. There should be funding for advocacy and interest group studies.

d. Once a site is chosen, the surrounding community should have input into implementation and operation of facilities, including a local committee with representation from community groups to review design and proposed implementation and provide public feedback. The local committee should include representatives from the regional police and fire departments and municipal planning and engineering departments.

e. An advisory committee, at arms length from the Corporation and the government should monitor the hazardous waste management process.

Commission Recommendations

1. The Commission agrees that public participation is required at every step of the program if the program is to be established without serious local opposition to site selection proposals. By means of education and information programs, followed by public participation in all stages of development, citizens will become knowledgeable about the nature of hazardous wastes and the best solutions to their treatment and disposal. They will also know that everyone is involved in the problem of hazardous waste generation and accept the fact that the facilities, which will deal with the problem, must be located as well and as safely as possible.

2. The Commission recommends that there should be formal hearings on all sites which are identified as technically sound and which have local support. The community should have the right to refuse facilities. Only as a last resort should the Corporation attempt to locate a site in an unwilling community. Government approval for such an action should be required.

3. The Commission recommends that a community committee, drawn from the community in which facilities are to be sited, be established which would meet regularly with Corporation staff and board members, commencing before construction begins. In this way the community would be kept fully informed of developments and could raise concerns or objections at any time and also negotiate with the Corporation on such matters as the social impact of the Corporation on the community, compensation claims, grants, etc.

4. The Commission also recommends that a technically oriented advisory committee be appointed which would advise the Corporation on site selection criteria, actual site selection, and the continuing operation of facilities after construction.

SITE SELECTION CRITERIA

One of the terms of reference of the Commission for the Stage II public hearings was that public opinion be solicited for recommendations on candidate site selection criteria.

Many briefs and commentaries made reference to site criteria. All agreed that an acceptable set of criteria was required for site selection. Most agreed that the criteria might be modelled along the lines of those presented in the departmental brief.

Concerns and Recommendations Received

a. The hazardous waste facility should be located on an impervious clay base. Testing will be required to determine the hydraulic conductivity of this base soil and also the depth of clay required below the bottom of a secure landfill excavation.

b. With regard to topographical and land use characteristics the following should be avoided:

- —wetland areas
- —prime agricultural land
- —steeply sloping terrain
- —areas subject to erosion or slumping
- —areas with fractures leading to groundwater aquifers
- —biologically sensitive areas
- —archeological and historic sites
- —areas of high population density
- —areas with resource development potential

c. Great care should be exercised that the facility is not located in a ground water recharge zone or in an area with seasonal high water tables.

d. Areas that have a frequency of natural hazards such as tornados or floods should not be considered as a site.

e. There must be a substantial degree of public acceptability particularly as it relates to citizens in the vicinity of the site.

f. Cognizance must be given to wind patterns to ensure that the facility is not located upwind of a population centre in terms of the prevailing wind direction. This is particularly important with regard to incineration.

g. If crown land is unavailable for the establishment of a hazardous waste facility, sufficient property must be purchased to ensure an adequate buffer around the site.

h. There must be provision on the site for disposing of detoxified effluent from treatment process operations, i.e. evaporation, deep well disposal or disposal to a surface water.

i. To minimize transport risks, the hazardous waste facility should be located as close as possible to the main source of hazardous waste.

j. Site services such as water supply, electrical energy and road access must be available. Rail access also would be an advantage.

k. In terms of a work force, a community or communities must be within reasonable commuting distances.

Commission Recommendations

1. The Commission received several briefs giving comprehensive coverage of site selection criteria categories and specific criteria within those categories from the Environment Department, Atomic Energy of Canada Limited and Scott/Guthrie Consultants. As well, the Commission was made aware of detailed criteria, ranked and weighted, which have been compiled and adopted by both the Ontario Waste Management Corporation and the Alberta Special Waste Management Corporation for actual hazardous waste facility site selection.

The Commission recommends that the Crown Corporation utilize all of this material in compiling a comprehensive detailed site selection criteria of its own, the various factors of which should be ranked and weighted to assist in their practical application to the consideration of several sites competing for selection.

2. The Commission recommends that public acceptance of the Corporation's criteria for site selection be obtained by the hearing process, which might be accomplished by one or two hearings.

3. The Commission believes that hydrogeological qualification of a site is the most important of the technical and engineering factors to be considered, and that in the socio-economic area, public acceptibility of the site must be obtained.

4. The Commission recommends that in the interest of limiting transportation risks and costs, the site logically should be located within a reasonable distance of the Winnipeg area where a major portion of hazardous waste is generated, provided suitable and acceptable sites are available.

THE CROWN CORPORATION

As a part of the terms of reference of the first round of Clean Environment Commission hearings on the hazardous waste management program held during the period of December, 1983 — February, 1984, public input was sought on the preferred option for ownership and operation of the proposed hazardous waste management facilities. This question had also been addressed at the symposium which followed the formal announcement of the program in 1982. On these occasions a crown corporation was selected as the preferred option by the majority of people voicing an opinion on this matter. In 1986, legislation was passed establishing the Manitoba Hazardous Waste Management Corporation as the crown corporation to carry out this mandate.

Although this decision had already been made prior to the hearings on which this report is based, a considerable number of briefs and representations made comment on this matter.

Concerns and Recommendations Received

a. Favourable points cited included: (a) a non-profit motive should promote thorough operations and safety; (b) financial stability and permanency of the operation should be ensured; (c) the ability to subsidize or equalize user fees is facilitated.

b. A considerable number of briefs and comments advocated that there should be no contracting out of some of the hazardous waste facility services to private sector operators, while some others thought that the Corporation should consider this possibility.

c. Some presentations noted that a crown corporation is not a guarantee of proper management of the facilities or of efficiency and sound financial management; others stated that continuity of ownership and management were important factors and would promote good management practices where safe practices are critical.

d. The brief of a large industrial firm stated that the Corporation would likely have a better opportunity to obtain necessary liability insurance at a reasonable cost than a private sector hazardous waste facility operator.

e. No MLA should be a member of the board of the Corporation; board members should represent a variety of occupations and interests; and there should be absolutely no conflict of interest.

Commission Recommendations

1. The membership of the Board of Directors of the Corporation should reflect a cross section of society and should operate the Corporation at arms length from government.

2. The meeting schedule of the Board of Directors should provide for reasonable public access to meetings and proceedings.

THE QUANTITY

The Environment Department's 1985 report, **Hazardous Waste Management In Manitoba**, estimated the quantity of hazardous waste requiring treatment and disposal to be 20,235 tonnes annually. This estimate was used by the consultants, IDS/Monenco, in the preparation of their assessment of the capital and operating costs for each of the management system options.

The estimates were obtained by a process of voluntary disclosure by 411 Manitoba companies after an initial contact of approximately 700 companies. A relatively small number of companies declined to provide information. The hazardous waste estimated was attributed to approximately 293 companies.

A report by Reid Crowther and Partners in 1980 had estimated Manitoba's hazardous waste at the level of 42,000 tonnes per year at that time. This study also gave estimates for per capita waste generation from various parts of the western world, varying from 12 to 28 kilograms per person. For Manitoba's population this would translate to between 12,600 and 29,400 tonnes per year — the estimate of 20,235 tonnes per year falling within this range. A 1981 inventory of hazardous waste in Winnipeg, carried out by a Joint City-Provincial Task Force, estimated Winnipeg hazardous waste to be 8,783 tonnes per year. This compared favourably with the 1985 estimate of the Department of 7,881 tonnes per year for the Winnipeg Region.

Concerns and Recommendations Received

a. During the hearings some of the estimated regional waste quantities were questioned as being unrealistically high. One of the large chemical companies in the western region estimated that only 12 tonnes per year of hazardous waste would be consigned by his company to the hazardous waste corporation for disposal, whereas, the inventory lists a total of 4,927 tonnes per year as the hazardous waste generated from two chemical companies in the western region.

b. Later in the hearings, the Commission noted that the Province of Alberta had received a number of estimates of its waste ranging all the way from 125,000 tonnes per year to 20,000 tonnes per year and that experience in other countries has demonstrated that the actual volume of waste received by a hazardous waste treatment plant may be as little as 20 percent of the total available. The 20,000 tonne quantity was chosen as the design figure for the Alberta hazardous waste plant. It was considered to be the best estimate for steady consumption, after initial stock piles of waste had been dealt with. This is approximately the same quantity of waste that has been estimated for Manitoba in the preliminary inventory projections; however, Alberta has a population about 2 1/2 times that of Manitoba and is probably more heavily industrialized.

c. An effluent which could be classified as a hazardous waste because of ammonia, nitrate and phosphorous content, is now disposed of by application in aqueous solution to crop land where such disposal is a benefit to the farmers involved because of the fertilizer and irrigation value.

d. Some industries, for example the pulp and paper industry, currently controlled by federal regulation, discharge large quantities of effluent which may have some components which are classified as hazardous waste, although in a dilute condition. The practicality of separating such substances from the waste stream was not explored.

e. After the implementation of regulations requiring special treatment and disposal of hazardous waste for a fee, industries will immediately look for methods to reduce their costs in this area, including, re-use, and approved in-house treatment and disposal. Such reduction can be substantial.

Commission Recommendations

1. As a result of the hearing input, the Commission believes there is a good possibility that the actual hazardous waste which will become available to the Manitoba Hazardous Waste Management Corporation may be considerably lower than 20,000 tonnes per year. The Commission recommends that the Corporation proceed with care in sizing its facility to handle the best estimate of continuous demand for hazardous waste disposal (also see THE HAZARDOUS WASTE MANAGEMENT SYSTEM OPTIONS).

COST OF THE SYSTEM

The cost of the hazardous waste management system is an area of prime concern to Manitobans as evidenced by a large amount of comment at the hearings.

Concerns and Recommendations Received

a. How accurate are the Environmental Management Division's cost estimates — how reliable are they? What is the relationship between the quantity of hazardous wastes and the costs of their disposal?

b. To what extent is "cost" the dominant factor in the Environmental Management Division's determination of their "preferred" option — does this compromise safety and health?

c. To what extent will the Crown Corporation be competitive in relation to costs in other jurisdictions and cost recovery? Will this cost structure encourage dumping or illegal avoidance of the system?

d. Public Funding:

i Funding for the facilities and its operation should be from the public purse.

ii Government subsidy is required to make the system viable.

iii The cost differential between centralized and regional facilities may be less when specific site factors are considered and also the cost of risk factors.

iv Capital costs should be shared by the private and public sectors while operating costs should be paid by generators.

e. Fees for treatment and disposal of hazardous waste must be competitive with those in other jurisdictions. Hazardous waste generators should pay a reasonable share of costs.

Commission Recommendations

1. Given questionable hazardous waste quantities based on preliminary quantities estimated by the Environment Department, the reliability of corresponding cost estimates is questioned and it is recommended that the Crown Corporation attempt to econometrically estimate industry's demand (price-quantity relationship) for hazardous waste disposal services (also see THE HAZARDOUS WASTE MANAGEMENT SYSTEM OPTIONS and THE COST OF THE SYSTEM).

2. A fee structure which must be set by the Corporation for collection and disposal services for industry should take into account a number of factors:

   a. it must be competitive with other jurisdictions so that the location of industry in Manitoba is not discouraged;

   b. it should be high enough to encourage industry on-site waste reduction and/or recycling;

   c. it should not be so high that illicit dumping or avoidance of the system is likely to occur. In this regard the cost of violation of the law (fines) is important and effective enforcement is mandatory.

3. Transportation costs should be equalized for waste generators throughout the province, independent of their distance from the waste disposal facilities so as not to penalize regional development.

SITING

At a number of hearings people presented general comments about the siting of hazardous waste facilities in addition to specific hazardous waste site selection criteria.

Concerns and Recommendations Received

a. A frequently voiced fear was that the most highly rated of the existing sanitary landfills identified in the 1985 Departmental report would become automatic candidate sites for a hazardous waste management facility. In this regard, it was recommended that municipal landfill sites and sewer systems not be made a part of the hazardous waste disposal system.

b. Site location:

i Prime farm land should not be used for main facilities or regional collection sites.

ii There must be no potential threat or unacceptable risk to the surrounding area.

iii There should be an adequate buffer zone around a hazardous waste site.

iv The location of a hazardous waste site in relation to major drainage systems is important.

v It would not be efficient to locate hazardous waste facilities in a region where only a small quantity of hazardous waste is generated e.g. the Parkland Region.

c. The transportation distance to a hazardous waste site and the increased risk of accidents enroute is not as important as the location of a hazardous waste facility site.

d. Potential hazardous waste sites should be ranked by a panel of experts appointed by the Crown Corporation. Suitable sites should be advertised, hearings held and a site chosen based on ranking and feedback.

e. There should be special landfills for hazardous waste in most areas, regardless of cost.

f. Compensation:

i The Crown Corporation should be willing to negotiate an incentives package for a community where a facilities site is being considered.

ii There should be some form of financial compensation to a community for hosting a hazardous waste facility.

iii There are benefits to a community located in close proximity to hazardous waste facilities e.g. employment, tax revenue.

g. The L.G.D. of Pinawa should be considered as a possible hazardous waste facilities site as it is willing to host facilities if the area qualifies with regard to site selection criteria.

h. The hazardous waste facility should be sited and operated in the shortest possible time.

Commission Recommendations

1. The Commission believes that the search for a facility site should be conducted on the basis of community acceptability and technical acceptability, concurrently. Of course, no site that is not technically sound can be considered.

2. The Commission recommends that constraint mapping is a logical way to initially identify areas which have merit for further consideration as facility sites. Constraint mapping is also a useful and easily understood method of conveying preliminary site selection information to the public.

3. If siting criteria are met, all qualified communities or municipalities should be given the op-

portunity to be considered as a facilities site. As technically suitable sites are identified, the Corporation should seek local interest and support by consulting with the communities in a variety of ways e.g. local meetings, workshops, informational seminars, etc.

4. An economic incentive package and other benefits might be utilized to induce interest in communities which qualify for consideration as a facilities site by virtue of meeting site selection criteria.

OPERATION OF FACILITY

A number of specific points were raised concerning particular facets of hazardous waste facility operations.

Concerns and Recommendations Received

a. Landfill:

i Only treated, detoxified, and stablizied waste should be landfilled.

ii Fixation methods considered for some treated hazardous waste residues should include encasement in high density concrete and glass.

iii Secure landfills must prevent leaching and provide for collection and removal of leachate if it does occur.

b. Above ground disposal of treated and stabilized waste might be preferable to underground disposal.

c. Secure landfills must be designed to allow for perpetual monitoring and future access to correct any problem condition that is detected.

d. Any liquid effluent discharged from the plant must be of environmentally acceptable quality that would not degrade any receiving waters.

e. Standards must be set for emissions from hazardous waste facilities and enforced.

f. Regional operational sites for a mobile incinerator would require separate hearings and approval.

g. Recycling and reclamation facilities should be a main component of the central hazardous waste facilities.

h. The hazardous waste facilities should not accept radioactive waste.

Commission Recommendations

1. For hazardous waste facility operations there must be rigid standards set for all emissions with continuous and perpetual monitoring and strict enforcement by the Environment Department.

2. Only treated, detoxified, stabilized and solidified waste should be consigned for disposal in a secure landfill or other approved storage.

RECYCLING AND ON-SITE WASTE REDUCTION

A large number of people were concerned that present hazardous waste should be reduced by recycling and re-use to the greatest extent possible.

Some persons emphasized that the reduction of hazardous waste by reduced production — involving reduction of consumer demand for products where manufacture results in the generation of hazardous waste — should be a goal of society.

Concerns and Recommendations Received

a. Recycling and reduction of hazardous waste by industry on-site treatment would reduce the risks involved in the transportation of hazardous wastes. Recycling would also reduce the production of waste materials and conserve demand for raw materials.

b. Recycling should be a major component of hazardous waste treatment facilities.

c. Greater research and development into recycling and waste reduction and treatment technology is necessary.

d. Legislation requiring the use of improved technology to decrease production of hazardous waste and recycling is required.

e. There should be incentives to industry to encourage recycling technology with penalties for failure to do so.

f. Industrial on-site recycling and treatment facilities should be carefully monitored by government.

g. The allowed production of hazardous waste should be frozen at the existing level with annual incremental reductions set each year.

h. The elimination of the production of hazardous waste should be an ultimate goal of society.

Commission Recommendations

1. The Commission believes that recycling, reuse, and industrial on-site treatment should all be very important features of the hazardous waste management program. Public information and education programs should address this matter, including individual waste reduction and the need for society to have the reduction of the total production of hazardous waste as a goal, including reduction in consumer demand for products involving the creation of hazardous waste in their manufacture.

2. The Commission recommends that the Corporation study the means of encouraging industry to reduce and recycle, including incentives to do so and penalties for failing to do so where practical measures are known to exist.

3. The Commission recommends that the Crown Corporation encourage industrial groups producing common hazardous waste to organize and work collectively to develop mutually beneficial recycling and recovery programs, especially where the possibilities of scale might prove to be practical and rewarding to all. Technological help or even grant aid should be considered to facilitate this.*

**The Commission was impressed by a brief submitted by the Professional Dry Cleaners of Manitoba which proposed that the dry cleaning industry itself is ready and willing to collect wastes from the entire industry throughout the province and transport these to a central location and recycling plant in Winnipeg. Only a small residue from this operation would eventually be channelled to the Manitoba Hazardous Waste Management Corporation for disposal. This recycling would reduce the use of additional new cleaning solvents and the operation would be economically self-sufficient. The only provincial assistance foreseen was help in obtaining adequate liability insurance and the licensing of industry vehicles to transport solvent waste in special containers to the central recycling facility.*

TRANSPORTATION

A number of briefs and hearing comments dealt with the matter of transportation of hazardous waste from its point of origin to the location of treatment and disposal facilities or to an out-of-province destination.

Concerns and Recommendations Received

a. Safe transport vehicles and the possibility of an accident were the major concerns. Containers should be able to withstand damage by accident.

b. Communities and residents located along major hazardous waste transportation routes are vulnerable to accidents as are communities with industries producing hazardous waste, by virtue of the loading and transportation of the waste out of the community. Transportation routes should avoid centres of population.

c. Northern Manitoba is more sensitive to the transport of hazardous waste and the possibility of an accident since most northern communities are serviced by only one principal highway, which could be tied up by a serious accident. There are also valuable waterways along the highway routes that would be vulnerable to accidental spills.

d. The cost of transportation might put industry in a region, located at some distance from treatment and disposal facilities, at an economic disadvantage. The cost of transportation to producers of waste should be equalized regardless of transport distance.

e. There must be stringent liability insurance for transporters including the costs for clean up of accidental spills and mitigation of resulting environmental damage.

f. Drivers must be trained to deal with an emergency.

Commission Recommendations

1. The cost of transportation of hazardous waste to industry should be equalized to avoid a penalty for distance from hazardous waste facilities.

2. Hazardous waste transportation routes should be considered by the Corporation and designated, avoiding centres of population, water bodies and otherwise senstive areas, to the extent possible.

3. It would be desirable that hazardous waste facilities be in a location serviced by both road and rail transport.

INTERIM HAZARDOUS WASTE DISPOSAL

There is a very high level of concern over current hazardous waste disposal practices, most of which will likely continue until the new treatment and disposal system is established a few years hence.

Concerns and Recommendations Received

a. The highest concern over current hazardous waste disposal practices related to the disposal of hazardous waste to municipal sewers and landfills. What is the effect of this on the province's groundwater and lakes and streams? Is public health threatened?

b. Concern was expressed with respect to present storage and disposal of PCB's, other chemicals and hazardous wastes.

c. There is a need for an updated inventory of hazardous wastes, including those being recycled, emitted to the atmosphere, sewered and/or landfilled. The City of Winnipeg, wants information on hazardous waste generation within the City to help them enforce proper disposal.

d. There is a need for precautionary interim measures with respect to hazardous wastes until the Province's Hazardous Waste Management system is up and running — for example, should a region's most acceptable landfill be used for hazardous wastes until the system is operating?

e. There is concern about the practice of hazardous waste detonation at the City of Winnipeg's Brady landfill site.

f. Current disposal of waste plastics is a concern as these should not be burned except in approved facilities. Regulations are reported to be shutting down hospital incinerators, creating a problem with respect to accumulating biomedical wastes. Plastics are a part of this problem.

g. The adequacy of the current accident cleanup program was questioned.

Commission Recommendations

1. In the interim period, until a new hazardous waste management system is in place, some additional temporary facilities may be required, which should be constructed and operated by the Crown Corporation and/or it might arrange for more out-of-province disposal.

2. Existing incinerator facilities should be examined to ascertain the present suitability for disposal of hazardous waste e.g. cement kilns for PCB disposal.

3. The Corporation should examine the acceptability of current disposal practices such as the detonation of hazardous waste at the Brady street disposal grounds and the disposal of medical wastes from health institutions.

4. As soon as a formal registration of hazardous waste production is accomplished, this information should be given to the appropriate municipal authority. The City of Winnipeg, for example, would like to have the information so that it could follow-up with generators to check on any improper disposal of hazardous waste into the City's sewage or landfill system.

PESTICIDES AND CONTAINERS

There is at present in Manitoba a voluntary program undertaken jointly by the Province and municipalities for disposing of pesticide containers and the residue of pesticides. Containers may be brought to designated disposal grounds where the residue is drained into barrels and the containers crushed. However, at most hearings a number of concerns were expressed that this present program is not adequately handling the problem. One estimate was given that there may be over one half a million containers utilized annually and if each contained 80 ml of residue, this would total over 40 tonnes of residue annually, much of which is not collected for proper disposal.

Concerns and Recommendations Received

a. Technical assistance should be given to commercial pesticide applicators for the design and operation of their pesticide systems, including disposal of containers and residue.

b. Over-application of pesticides to crops and land is a hazard to the ecology and the fertility of the land — also to groundwater, and surface run-off water.

c. Pesticide residue is going into the ground where it is a hazard to groundwater.

d. The increasing use of plastic containers is a problem to the present system, and possible attempts to burn these would create additional hazards.

e. There should be a substantial deposit on containers to encourage return to dealers or distributors for proper disposal or re-use. At present, dealers and distributors do not have facilities for the acceptance and storage of returned containers and residue.

f. There should be a fine for improper disposal and this should be strictly enforced.

Commission Recommendations

1. The current disposal system for used pesticide containers and residue should be integrated into the hazardous waste program of the Crown Corporation.

2. The Department should give immediate consideration to the present program to determine what, if any, improvements might be implemented in the interim period.

HOUSEHOLD HAZARDOUS WASTE

An individual household does not have much hazardous waste to dispose of on a regular basis but every household generates some hazardous waste. The cumulative total of such waste, particularly in a large city, can amount to a significant quantity which requires proper disposal. This matter received considerable attention at the hearings.

Concerns and Recommendations Received

a. Most household hazardous waste goes into the sewer or into the garbage can and thence to a regular landfill. At the present time there is little alternative for the individual for disposal of hazardous waste.

b. Adequate provision for household waste in the management plan is essential. Cities having garbage collection service should adopt a system whereby all household waste is separated into specific catgories for pick-up and disposal eg. hazardous waste, paper, metals, rags, etc.

c. Public education and accessibility are the keys to a successful household hazardous waste program.

d. Every community requires a household hazardous waste collection facility. Centralized regional collection facilities, as proposed, would not be sufficient.

e. To encourage householder participation there should be no charge to the householder for depositing hazardous household waste in a community hazardous waste collection facility.

Commission Recommendations

1. It is important to divert household hazardous waste from the mainstream of regular municipal domestic waste. The Crown Corporation should assume a leadership role in organizing the local collection of hazardous waste. This may involve the participation of the community or municipality. Local temporary storage facilities will likely be required.

2. There should be no charge to the householder for the deposit of household hazardous waste in local facilities. The Crown Corporation should be responsible for the pick up of this hazardous waste and transport to a regional storage facility or a treatment and disposal site.

3. A public education program will be necessary at the onset of this collection program including a school education program component.

4. Special labelling of household products which contain "hazardous waste" is required to facilitate householder recognition of the waste and co-operation in proper disposal.